

Audial

AYA 5

USER MANUAL

Revision A, October 2021

This manual comprises introducing information on the use and performance of this device. For more information, please refer to the Audial website, or send your questions to info@audialonline.com.

IMPORTANT!

1. This manual is a guide only.
2. Do not expose this device to rain or moisture, excessive heat or mechanical force.
3. Use this device exclusively with specified voltages.
4. Unplug the device from the wall outlet during a lightning storm.

Copyright © 2021, Audial d.o.o.

www.audialonline.com

AYA 5 DAC

Audial AYA 5 is a high quality, TDA1541A based non-oversampling D/A converter, with USB, S/PDIF electrical (coaxial), and S/PDIF optical inputs.

The AYA 5 USB input stage operates as an asynchronous (master) USB device, so it also generates the clock signal for the D/A conversion. Two low jitter clocks are included, one that works with 44.1/88.2/176.4/352.8 kHz, and the other that works with 48/96/192/384 kHz audio sampling frequencies. This way the unit achieves a clean clocking scheme, and all the audio clock signals in the system are generated only by frequency dividing, and not by using PLL synthesizers.

With this USB input, the AYA 5 supports sampling rates up to 384 kHz. Please note that the Windows audio does not support operation above 192 kHz, so the ASIO driver is required to utilize this feature.

The USB stage also provides galvanic decoupling between the USB and D/A stage, thus separating possibly noisy PC from audio circuits.

The AYA 5 USB stage supports the four channel operation. The first two channels D/A conversion is performed by its own D/A stage, so the AYA 5 normally operates as a stereo DAC, while two additional channels are available as a digital output on the HDMI connector, which complies with Audial A-link specifications. The third channel is available at pin 1, and the fourth channel at pin 10. Detailed A-link specifications are available on the Audial website.

The AYA 5 also employs 75 Ohm BNC, transformer coupled S/PDIF, and optical input, operational up to 96 kHz Fs.

Optionally, the AYA 5 can also provide a PCM direct input to TDA1541A, by using HDMI (A-link), or by using the set of PCB U.FL connectors, and these inputs can accept either I2S or Philips simultaneous data protocol. Detailed information about this AYA 5 optional feature is provided separately, to the AYA 5 customers.

USING THE AYA 5

The AYA 5 mains connector and switch are located on the backplate, while the input selector is located on the front plate, along with the power LED indicator.

The AYA 5 DAC is easy to use device, and normally it requires no special maintenance or care.

It is however not recommended to leave the AYA 5 permanently powered up, because its D/A converter chip (TDA1541A) is a classic TTL architecture, so it dissipates more power than it is usual for devices of this kind these days. Generally, leaving the AYA 5 powered off overnight will ensure many years of reliable operation.

The AYA 5 achieves claimed technical performance (distortion, frequency response, etc.) right from the start, however it needs a couple of weeks of burning in to perform its best in subjective sonic terms.

WARRANTY

Audial claims proper working of this product for two years. Audial is obliged to correct any malfunction within this period, at no charge, either by competent repair service, or by swapping the sold unit with the new one.

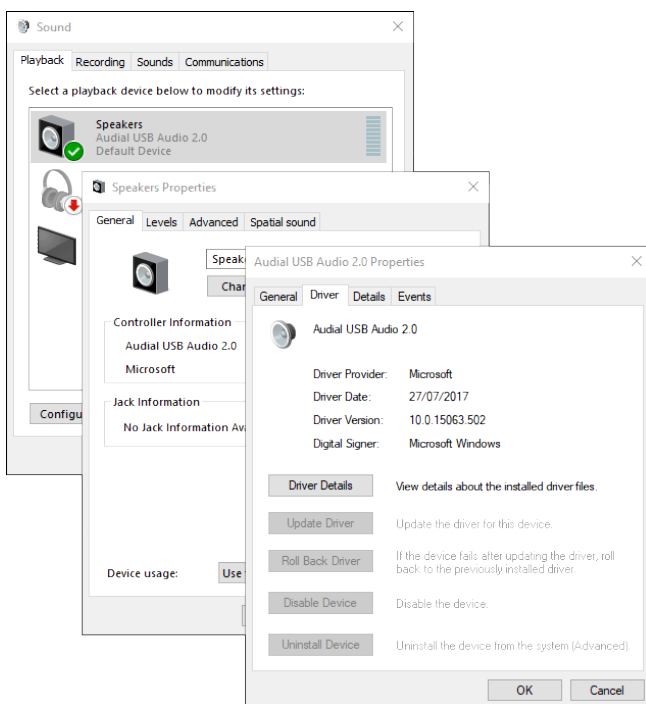
For the units sold directly by Audial, the invoice is also a guarantee certificate. Since Audial maintains database of directly sold units, the original buyers in most cases won't need it. Warranty is still fully transferrable from the original to the subsequent owner(s), however in this case we will probably ask for the invoice.

USB AUDIO CLASS 2.0

The AYA 5 USB stage employs the USB Audio Class 2.0 definitions.

Mac OS X and Linux are natively USB Audio Class 2.0 compliant for several years now, and this device hence does not require special driver when used with Mac OS X or Linux.

Since September 2017, Windows 10 (1703) also supports USB Audio Class 2.0 definitions, so the AYA 5 is plug and play with recent Windows 10 too. Once it is connected to the Windows 10 machine, the small window will pop up in the bottom right corner of the screen, reporting about the initial connection routine, and once this process is finished, the device can be found as a playback audio device, available in the system.

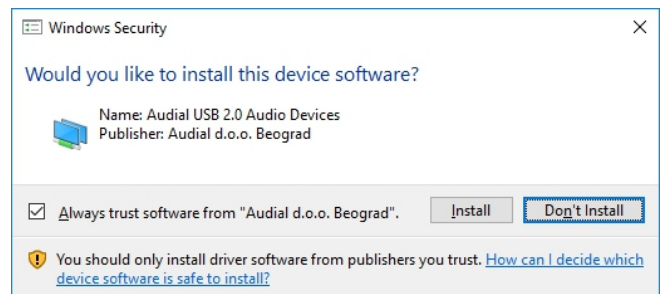


DEDICATED WINDOWS USB DRIVER

In addition, Audial provides a dedicated Windows USB driver for this device, which is still necessary with earlier Windows versions. This driver also provides additional functionality such as firmware update, ASIO interface, buffer length control, and it can be generally preferred soundwise.

Users can download this driver from the Audial website. Driver version 1.26 can be installed to Windows XP, Vista, 7, 8, 8.1 and 10. Later driver version 2.10 however improves on compatibility with later PC systems, and can be installed to Windows 7, 8, 8.1, and 10. All driver versions are compatible with both 32 and 64-bit Windows. Please however note that the driver version 2.10 does not support 4 channel functionality.

To install the driver, please unzip the provided file, and run setup.exe. The installation window will pop up, and at one stage you will be asked to connect the device. Also, during this process, depending on your Windows version and security settings, you might be asked a couple of times to allow the installation, so please do so. These windows will look like this.

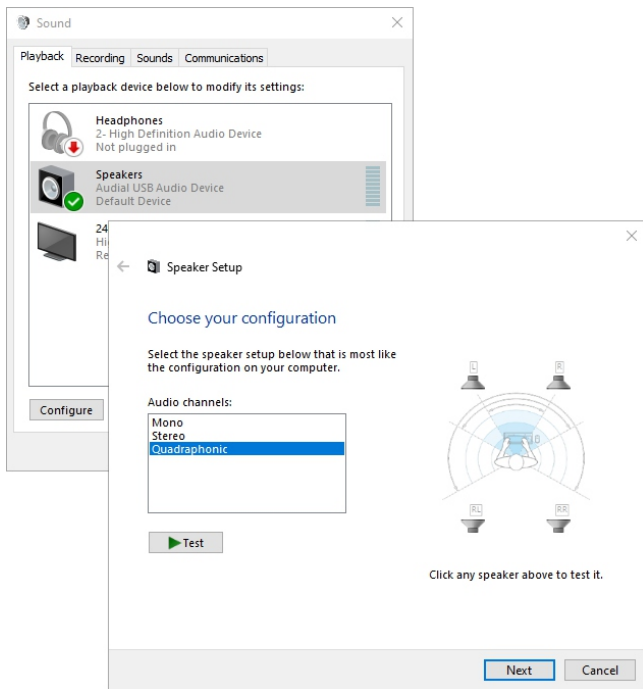


Once the installation is complete, you can configure your settings by using the control panel, available in Windows Start Menu -> Audial.

USB CHANNELS CONFIGURATION

The AYA 5 USB stage offers four channel functionality, yet its use as a USB stereo DAC is straightforward.

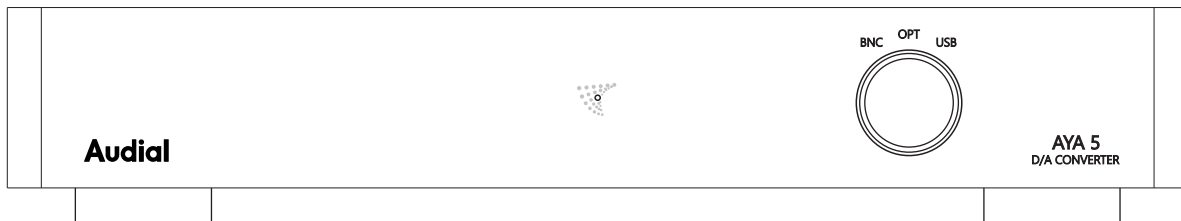
In Windows, the channels can be configured at Control Panel -> Sound. Under the Playback tab you will find the Audial USB device, and Configure button will pop up another, a self-descriptive window.



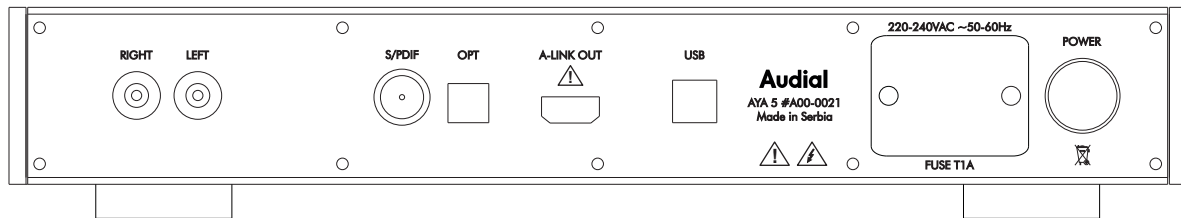
In most cases, for stereo operation, this can be set to either Stereo or Quadrasonic, with no change regarding the first two (front) channels.

If set to Quadrasonic, the first two channels are normally available at AYA 5 analog outputs, while two more (rear) channels will be available as a digital output at its A-link (HDMI) output connector.

For more advanced multichannel operation, it is recommended to use dedicated audio software. Foobar2000 is a good starting point, for its "Custom channel mapping" for ASIO output, and digital "Crossover" plugin.



AYA 5 front plate



AYA 5 back plate

From left to right:
 RCA output connectors,
 S/PDIF BNC input connector, S/PDIF optical input connector,
 PCM A-link output connector, USB input connector,
 mains connector, mains switch.

SPECIFICATIONS

INPUTS:

USB 2.0, supports 2.0 Class Definitions for Audio Devices, asynchronous operation; F_s max 384 kHz

S/PDIF, 75 Ohm BNC; F_s max 96 kHz

S/PDIF optical; F_s max 96 kHz

Optional: PCM direct, by A-link HDMI and U.FL PCB connectors; I2S or Philips simultaneous data protocol

OUTPUT:

Analog output RCA, 2.1 V RMS, output impedance 100 Ohm

The 3rd and 4th channels from the USB input are available at A-link output pins 1 and 10; V_{HI} = 2.8 V typical

FREQUENCY RESPONSE:

Sin(x)/x equivalent:

@ $f_s=44.1$ kHz: -3.2dB @ 20kHz

@ $f_s=88.2$ kHz: -0.8dB @ 20kHz

@ $f_s=192$ kHz: -0.2dB @ 20kHz

@ $f_s=384$ kHz: -0.1dB @ 20kHz

TRANSIENT RESPONSE:

Clean, with no overshoot or ringing

ABSOLUTE PHASE:

Correct (non-inverting)

HARMONIC DISTORTION (@ 1kHz):

0.01% @ -6dBFS (I/V dominated)

0.006% @ -12dBFS (I/V dominated)

0.9% @ -60dBFS(D/A dominated)

INTERMODULATION DISTORTION (CCIR):

0.01%

MAINS VOLTAGE:

220-240VAC/50-60Hz or 110-120VAC/50-60Hz

DIMENSIONS (W x D x H):

347x 220 x 64 mm, including feet, but excluding knob and connectors

NET WEIGHT:

Approx. 3.1 Kg

